

# Translations of Patent Abstracts

## 1. KR1020000027178

(1) Status: Withdrawn

(2) Title: APPARATUS FOR RESTORING SYMBOL TIMING OF OFDM  
(ORTHOGONAL FREQUENCY DIVISION MULTIPLEXING) SYSTEM

(3) Applicant: Hyundai Electronics Ind. Co., Ltd.

(4) Abstract

An apparatus for restoring a symbol timing of an OFDM system includes a decimator (21), a delaying part (22), a complex conjugation part (23), a complex multiplication part (24), and a sliding integration part (25).

The decimator decimates a signal quantized at an OFDM sample transmission rate with a sample spacing of a decimation degree. The delaying part delays an output of the decimator by a length of the effective symbol interval. The complex conjugation part outputs a complex conjugate value of a signal outputted in the delaying part. The complex multiplication part multiplies the output signal of the decimator by an output signal of the complex conjugation part. The sliding integration part accumulates an output of the complex multiplication part by the number of samples in the protection interval.

As symbol timing restoration is simultaneously performed with carrier restoration, time required for synchronization is reduced. In addition, as separate secondary signals are not required for estimating symbol timing offset, the apparatus can be widely applied to general OFDM receivers and reduce complexity of hardware.